Pest and disease control in organic farming

Organic farming is an holistic method of farming that works with - rather than against - natural systems. The damage caused by pests and diseases is reduced using a number of fundamental practices:

1. Use of sustainable crop rotations

Effective crop rotations are fundamental to both fertility and pest and disease control in organic farming. Crop rotations provide a break in the life cycles of the pest by removing 'host' crops for prolonged periods of time. Rotations also help in supporting a more diverse and stable agri-ecosystem. This helps in building populations of natural pest-predators.

2. Maintenance of biodiversity

By encouraging and not destroying the insect population in organic crop production, the organic system preserves and enhances biodiversity. Natural enemies of pest species are able to thrive, exerting control on pest populations. Conservation and improvement of natural features of the landscape, such as hedgerows and ponds and the construction of 'beetle banks' and sown flower strips, will also enable communities of pest-predators to flourish.

3. Optimum crop health

The basis of the environmental benefits which come from organic farming is a healthy living soil. Microbes in the soil process organic matter to provide a balance of minerals and nutrients which are utilised by plants to achieve healthy, vigorous crop growth. When this balance is achieved the associated health of the crop gives it a heightened ability to withstand pest and disease attack. Good crop husbandry and hygiene also make a significant contribution to the health of the crop and the prevention of pest and disease problems.

4. Resistant varieties

By selecting crop varieties with natural resistance to particular pests and diseases, the likelihood of disease problems occurring - and the need to control them with chemical inputs - can be significantly reduced, or even avoided.

Using this holistic approach and incorporating these fundamental practices ensures that additional pest control measures are rarely called upon in organic system. However, in some circumstances particular pests can 'over-ride' this system - and potentially cause damage. Circumstances where this could occur are often related to weather conditions that unexpectedly favour a specific pests, such as aphids. Alternatively, they may occur in the early period of the farmer's conversion to organic farming when diversity in the system is lacking through previous non-organic management.

Options for the organic farmer or grower are limited and often it will simply be a case of

Inputs in organic farming - a last resort

Inputs used in organic farming in the UK are all listed within the European Council regulation (2092/91) that governs organic farming in all EU member states. All products allowed have been assessed on their necessity, origin, impact on the environment, effect on other animals and humans before being warranted as acceptable in organic farming.

For example, in limited cases, pests can 'over-ride' an organic system and cause damage. A problem could be caused by unusual weather conditions that favour a particular pest and disrupt the balance of biodiversity. When this happens a limited number of pesticides can be used as a last resort. Seven pesticides are allowed on UK organic farms and even fewer, four, can be used on Soil Association farms (copper, rotenone, sulphur and soft soap). In addition, herbicides (weedkillers) are banned from use on organic farms. Most of the substances are *restricted* - in other words, the farmer has to justify the need for the input and explain how they will reduce future reliance on the product before they can use it. The Soil Association is aiming to restrict the use of these pesticides even further in the future. Other input products, such as seaweed which is used to build fertility, are likely to continue to have a place in organic farming due to their restorative and benign properties.

The four pesticides allowed on Soil Association UK organic farms are outlined in brief below and more detail can be found in 'Pesticides in organic farming - a last resort':

- **Copper** fungicides (mainly used on potatoes and some orchards)*
- **Rotenone** (a natural plant extract, also known as Derris)*
- **Sulphur (**an element that is used to control some fungal diseases in a limited range of crops)**
- **Soft soap** (derived from fatty acid potassium soap of natural origin and may be used to control aphid populations).**

* The use of copper and rotenone is 'restricted' and can only be used were the need is recognised by the Soil Association.
** Farmers do not require prior permission to use sulphur or soft soap, however, they can only be used where there is an actual threat to the crop, i.e not preventatively.

Other inputs that may be used in organic agriculture:

- **Seaweed**, to build fertility
- Ground **limestones**, rock **potash** and rock **phosphate** all of which are naturally occurring minerals. They are used to condition the soil.
- **Plastic mulches**. Organic farmers are encouraged to find recycling facilities for plastic mulches when they can no longer be re-used. This link takes you to the list of agricultural plastic recycling schemes on our website: http://www.soilassociation.org/web/sa/psweb.nsf/B2/agricultural_plastics.html

Further Reading

Soil Association information sheet, 'Pesticides in organic farming - a last resort'

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